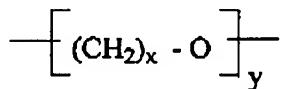


Docket No. 201ES034A  
Serial No. 10/694,558  
June 19, 2006  
Page 2

What is claimed is:

1. (Currently Amended) A thermoplastic polyurethane polymer comprising:  
a polyether polyurethane derived from at least one polyisocyanate diisocyanate reacted in a one-shot process with at least one hydroxyl terminated aromatic glycol chain extender and at least one hydroxyl terminated polyether intermediate containing an alkylene oxide having the formula



wherein x is an integer from 1 to 10 and y is an integer from 11 to 115 wherein the amount of aromatic glycol chain extender used is from about 1.2 to about 1.8 moles per mole of hydroxyl terminated polyether intermediate and the mole ratio of the at least one diisocyanate used is from about 0.95 to about 1.05 moles of diisocyanate per mole of the total moles of the one or more hydroxyl terminated polyether intermediate and the one or more hydroxyl terminated aromatic glycol chain extender.

2. (Original) A thermoplastic polyurethane polymer of claim 1 wherein said hydroxyl terminated polyether intermediate is polyethylene glycol.
3. (Original) A thermoplastic polyurethane polymer of claim 2 wherein said polyethylene glycol has a number average molecular weight of from about 1,000 to about 2,000.
4. (Original) A thermoplastic polyurethane polymer of claim 1 wherein said hydroxyl terminated aromatic glycol is hydroquinone bis (2-hydroxyethyl) ether.
5. (Cancelled)

Docket No. 201ES034A

Serial No. 10/694,558

June 19, 2006

Page 3

6. (Currently Amended) A thermoplastic polyurethane polymer of claim 5 1 wherein said diisocyanate is methylene bis-diphenyl diisocyanate 4,4'-methylene bis-(phenyl isocyanate).

7. (Original) A thermoplastic polyurethane polymer of claim 1 wherein x is an integer from 2 to 6 and y is an integer from 20 to 80.

8. (Original) A thermoplastic polyurethane polymer of claim 7 wherein x is 2 and y is an integer from 28 to 38.

9. (Currently Amended) A thermoplastic polyurethane polymer of claim 1 2 having a moisture vapor transmission value greater than about 4500 g/m<sup>2</sup> day, as measured on a 1.0 mil thick sample.

10. (Original) A thermoplastic polyurethane polymer of claim 9 having a moisture vapor transmission value greater than about 5500 g/m<sup>2</sup> day, as measured on a 1.0 mil thick sample.

11. (Currently Amended) A thermoplastic polyurethane polymer of claim 1 2 having a surface resistivity of less than about  $1.0 \times 10^{11}$  ohms/square as measured according to ASTM D-257.

12. (Original) A thermoplastic polyurethane polymer of claim 11 having a surface resistivity of less than about  $3.0 \times 10^{10}$  ohms/square as measured according to ASTM D-257.

13. (Original) A thermoplastic polyurethane polymer of claim 1 wherein said hydroxyl terminated polyether intermediate has a number average molecular weight of from about 350 to about 10,000.

Docket No. 201ES034A  
Serial No. 10/694,558  
June 19, 2006  
Page 4

14. (Original) A thermoplastic polyurethane polymer of claim 13 wherein said hydroxyl terminated polyether intermediate has a number average molecular weight of from about 500 to about 5,000.

15. (Original) A thermoplastic polyurethane polymer of claim 14 wherein said hydroxyl terminated polyether intermediate has a number average molecular weight of from about 700 to about 3,000.

16. (Original) A thermoplastic polyurethane polymer of claim 15 wherein said hydroxyl terminated polyether intermediate has a number average molecular weight of from about 1,000 to about 2,000.

17. (Original) A thermoplastic polyurethane polymer of claim 1 having a melting point of from about 150°C to about 220°C as determined according to ASTM D-3417-99.

18. (Original) A thermoplastic polyurethane polymer of claim 17 having a melting point of from about 160°C to about 200°C as determined according to ASTM D-3417-99.

19. (Original) A thermoplastic polyurethane polymer of claim 18 having a melting point of from about 165°C to about 180°C as determined according to ASTM D-3417-99.

Claims 20-21. (Cancelled)

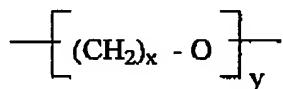
22. (Currently Amended) A thermoplastic polyurethane polymer of claim 1 wherein said hydroxyl terminated polyether intermediate is polyethylene glycol having a number average molecular weight of from about 1,000 to about 2,000, said polyisocyanate is ~~methylene bis diphenyl diisocyanate~~ 4,4'-methylene bis-(phenyl isocyanate), said aromatic glycol chain extender is hydroquinone bis (2-hydroxyethyl) ether, and wherein said polyurethane polymer has a moisture vapor transmission rate of greater than about 5500 g/m<sup>2</sup> day as measured on a 1.0 mil

Docket No. 201ES034A  
Serial No. 10/694,558  
June 19, 2006  
Page 5

thick sample and a melting point of from about 165°C to about 180°C as measured according to ASTM D-3417-99.

23. (Currently Amended) A process for producing a thermoplastic polyurethane polymer comprising the steps of:

mixing and reacting in a one-shot process at least one polyisocyanate diisocyanate, at least one hydroxyl terminated aromatic glycol chain extender and at least one hydroxyl terminated polyether intermediate, wherein said polyether intermediate contains an alkylene oxide having the formula



wherein x is an integer from 1 to 10 and y is an integer from 11 to 115 wherein the amount of aromatic glycol chain extender used is from about 1.2 to about 1.8 moles per mole of hydroxyl terminated polyether intermediate and the mole ratio of the at least one diisocyanate used is from about 0.95 to about 1.05 moles of diisocyanate per mole of the total moles of the one or more hydroxyl terminated polyether intermediate and the one or more hydroxyl terminated aromatic glycol chain extender.

24. (Cancelled)

25. (Currently Amended) A process of claim 24 23 wherein the mole ratio of said polyisocyanate diisocyanate to the total moles of said polyether intermediate and said aromatic chain extender is from about 0.98 to about 1.03 moles of polyisocyanate diisocyanate per mole of polyether intermediate and aromatic chain extender.

26. (Original) A process of claim 25 wherein said hydroxyl terminated polyether intermediate is polyethylene glycol.

Docket No. 201ES034A

Serial No. 10/694,558

June 19, 2006

Page 6

27. (Currently Amended) A process of claim 25 wherein said aromatic glycol chain extender is hydroquinone bis (2-hydroxyethyl) ether.

28. (Cancelled)

29. (Currently Amended) A process of claim 28 25 wherein said diisocyanate is methylene bis-diphenyl diisocyanate 4,4'-methylene bis-(phenyl isocyanate).

30. (Original) A process of claim 23 wherein x is an integer from 2 to 6 and y is an integer from 20 to 80.

31. (Original) A process of claim 30 wherein x is 2 and y is an integer from 28 to 38.

32. (Original) A process of claim 23 wherein said hydroxyl terminated polyether intermediate has a number average molecular weight of from about 350 to about 10,000.

33. (Original) A process of claim 32 wherein said hydroxyl terminated polyether intermediate has a number average molecular weight of from about 700 to about 3,000.

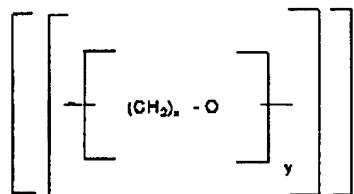
34. (Original) A process of claim 33 wherein said hydroxyl terminated polyether intermediate has a number average molecular weight of from about 1,000 to about 2,000.

35. (Original) A process of claim 23 wherein said reaction is performed in an extruder for a reaction time of from about 2 minutes to about 10 minutes at a temperature of from about 100°C to about 220°C.

36. (Original) A process of claim 35 wherein said reaction time is from about 3 minutes to about 5 minutes.

Docket No. 201ES034A  
Serial No. 10/694,558  
June 19, 2006  
Page 7

37. (Currently Amended) A breathable article comprising: (a) at least one layer of fabric and (b) at least one layer of thermoplastic polyurethane polymer, wherein said polyurethane polymer is a polyether polyurethane derived from at least one polyisocyanate diisocyanate reacted in a one-shot process with at least one hydroxyl terminated aromatic glycol chain extender and at least one hydroxyl terminated polyether polyethylene glycol intermediate containing an alkylene oxide having the formula



~~wherein x is an integer from 1 to 10 and y is an integer from 11 to 115 wherein the amount of aromatic glycol chain extender used is from about 1.2 to about 1.8 moles per mole of hydroxyl terminated polyether intermediate and the mole ratio of the at least one diisocyanate used is from about 0.95 to about 1.05 moles of diisocyanate per mole of the total moles of the one or more hydroxyl terminated polyether intermediate and the one or more hydroxyl terminated aromatic glycol chain extender.~~

38. (Original) An article of claim 37 wherein said at least one layer of fabric comprises a non-woven fabric.

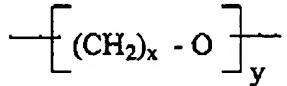
39. (Original) An article of claim 37 wherein said at least one layer of fabric comprises a woven fabric.

40. (Original) An article of claim 37 wherein said article comprises at least one layer of fluoro polymer in addition to said at least one layer of fabric and at least one layer of thermoplastic polyurethane polymer.

Docket No. 201ES034A  
Serial No. 10/694,558  
June 19, 2006  
Page 8

41. (Original) An article of claim 40 wherein said article is an article of clothing.
42. (Original) An article of claim 37 wherein said article is house wrap.
43. (Original) An article of claim 37 wherein said article is an article of roofing membrane.
44. (Currently Amended) An article of claim 37 wherein said hydroxyl terminated polyether intermediate is polyethylene glycol having a number average molecular weight of from about 1,000 to about 2,000, said diisocyanate polyisocyanate is 4,4'methylene bis-(phenyl isocyanate) methylene bis-diphenyl diisocyanate, said aromatic glycol chain extender is hydroquinone bis (2-hydroxyethyl) ether, and wherein said polyurethane polymer has a moisture vapor transmission rate of greater than about 5500 g/m<sup>2</sup> day as measured on a 1.0 mil thick sample and a melting point of from about 165°C to about 180°C as measured according to ASTM D-3417-99.

45. (Currently Amended) A melt spun fiber comprising a thermoplastic polyurethane polymer, wherein said polyurethane polymer is a polyether polyurethane derived from at least one diisocyanate polyisocyanate reacted in a one-shot process with at least one hydroxyl terminated aromatic glycol chain extender and at least one hydroxyl terminated polyether intermediate containing an alkylene oxide having the formula



wherein x is an integer from 1 to 10 and y is an integer from 11 to 115 wherein the amount of aromatic glycol chain extender used is from about 1.2 to about 1.8 moles per mole of hydroxyl terminated polyether intermediate and the mole ratio of the at least one diisocyanate used is from about 0.95 to about 1.05 moles of diisocyanate per mole of the total moles of the

Docket No. 201ES034A  
Serial No. 10/694,558  
June 19, 2006  
Page 9

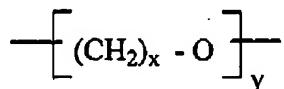
one or more hydroxyl terminated polyether intermediate and the one or more hydroxyl terminated aromatic glycol chain extender.

46. (Original) A melt spun fiber of claim 45 comprising an additive to cross link said polyurethane polymer.

47. (Currently Amended) A melt spun fiber of claim 46 wherein said additive to cross link said polyurethane polymer is a 4,4'-methylene bis-(phenyl isocyanate) diphenylmethane diisocyanate-terminated polyether prepolymer, wherein said prepolymer is derived from poly(tetramethylene ether) glycol reacted with 4,4'-methylene bis-(phenyl isocyanate) methylene bis-diphenyl diisocyanate.

48. (Original) A melt spun fiber of claim 47 wherein the level of said additive used is from about 5 weight percent to about 20 weight percent of the said fiber.

49. (Currently Amended) A clothing garment comprising melt spun fibers, said fibers are thermoplastic polyurethane polymer fibers derived from at least one polyisocyanate diisocyanate reacted with in a one-shot process at least one hydroxyl terminated aromatic glycol chain extender and at least one hydroxyl terminated polyether intermediate containing an alkylene oxide having the formula



wherein x is an integer from 1 to 10 and y is an integer from 11 to 115 wherein the amount of aromatic glycol chain extender used is from about 1.2 to about 1.8 moles per mole of hydroxyl terminated polyether intermediate and the mole ratio of the at least one diisocyanate used is from about 0.95 to about 1.05 moles of diisocyanate per mole of the total moles of the

Docket No. 201ES034A

Serial No. 10/694,558

June 19, 2006

Page 10

one or more hydroxyl terminated polyether intermediate and the one or more hydroxyl terminated aromatic glycol chain extender.

50. (Original) A clothing garment of claim 49 comprising polyester fibers woven together with said melt spun thermoplastic polyurethane polymer fibers.

51. (Currently Amended) A clothing garment of claim 50 wherein said hydroxyl terminated polyether intermediate is polyethylene glycol, said diisocyanate polyisocyanate is 4,4'-methylene bis-(phenyl isocyanate) ~~methylene bis-diphenyl diisocyanate~~, said aromatic glycol chain extender is hydroquinone bis (2-hydroxyethyl) ether, and wherein said polyurethane polymer has a moisture vapor transmission rate of greater than about 5500 g/m<sup>2</sup> day as measured on a 1.0 mil thick sample and a melting point of from about 165°C to about 180°C as measured according to ASTM D-3417-99.